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PLANT ENGINEERING BRANCH REORGANIZES

In order to ensure prompt completion of the more than \$16 million construction and alteration program now under way at NIH, the Plant Engineering Branch, Division of Research Services, is undergoing reorganization.

The responsibilities of PEB will include, as at present, the handling of normal maintenance work and repairs, but the responsibility for the new construction program and major alteration projects will be carried out by the reactivated Research Facilities Branch. This streamlining will keep normal maintenance and repairs current while new projects are being completed.

Clarence May, present Chief of PEB, is assigned to the Office of the Chief, DRS, as assistant in the area of PEB and RFPB activities, and Ross Holliday is Acting Chief, PEB. Lloyd Runkle is RFPB Acting Chief. RFPB will start functioning on October 1, with offices on A wing, first floor, Building 10.

Although complete staffing of the two Branches is not complete, it is planned to add several professional people to the staff as well as other personnel.

Major projects now under way at NIH include plans and specifications for construction of a new building for DBS; new wings F and G to Building 14 to be used initially as temporary office space and later for animal breeding; a new dog wing and laboratory wing for Building 28; a new office building; a new Dental Building; a chemical disposal building; additional operating facilities; and a germ-free laboratory in Building 8. Projects already under contract include renovation of Building 9; the new residential treatment center known as T-4; and miscellaneous changes in various buildings and laboratory equipment.

NIH Scientists Received at Vatican



While attending meeting of the International Union Against Cancer at Rome, Italy, last month, Drs. Harold F. Dorn (left), Wilhelm C. Hueper (center), and Carl D. Larsen (not pictured) were greeted by Pope Pius XII. Professor J. Maisin, of Belgium (right), is President of the IUAC.

DR. J. M. HUNDLEY GOES ON LEAVE TO AID IN UN RESEARCH

Dr. James M. Hundley, Chief of Laboratory Research and also of the Laboratory of Nutrition and Endocrinology, NIAMD, has been granted a two years' leave of absence to administer a research program for the United Nations Children's Emergency Fund and the Food and Agricultural Organization of the United Nations. His headquarters will be at the UN building, New York City.

Dr. Hundley's duties will take him to underdeveloped countries in search of products to be tested for use as practical substitutes for milk in the feeding of mothers and children in those areas. The Rockefeller Foundation has contributed funds for grants to laboratories where these products are to be tested.

(See Hundley, Page 3)

GRADUATE SCHOOL STARTS OCTOBER 1

A broadened curriculum in the Graduate School will be offered this semester, which begins on October 1. The new curriculum is designed to meet the educational needs of employees with a wide variety of professional and job interests. A total of 30 courses will be offered in the fields of biological sciences, physical sciences, statistics, languages, administration, and public speaking.

Among the new courses to be offered in the fall semester are General Mycology, Biophysical Instrumentation, Biochemistry of Nonsteroid Hormones, Physiology of Bacteria, Advanced Organic Chemistry, and Microbial Biochemistry.

(See School, Page 4)

Aid in Diagnosis of Opiate Addiction

No. 169 in a Series

Diagnosis of drug addiction involves the demonstration of abstinence syndromes, quite distinctive for opiate, barbiturate and alcohol addiction. The development of a new drug, N-allylnormorphine, has made possible the swifter diagnosis of addiction to morphine, heroin, methadone, and other opiate-like drugs. An exception is meperidine.

N-allylnormorphine ("nalorphine," U.S.P.; "Nalline," Merck) exhibits remarkable opiate-antagonistic properties. In opiate addicts, the drug precipitates well-defined abstinence syndromes of short duration (1-2 hours) within 15 minutes after subcutaneous injection, even when the individual has been rendered comatose and almost apneic by an overdose of an opiate-like drug. The intensity of such N-allylnormorphine-precipitated abstinence syndromes varies directly with the intensity of addiction and the amount of the drug administered. If the dose is excessive, dangerously intense "withdrawal" phenomena may occur.

In diagnosing addiction, the initial dose of N-allylnormorphine should not exceed three milligrams, injected subcutaneously. If, within 15 minutes, yawning, lacrimation, mydriasis, rhinorrhea, perspiration, and/or piloerection do not appear, a second dose of five milligrams may be administered subcutaneously. If abstinence phenomena again fail to appear, a final dose of seven milligrams may be administered by the same route. Total dosage: 15 milligrams.

Appearance of abstinence phenomena indicates that the individual has been using an opiate-like drug in sufficient amounts and with sufficient regularity to have developed a pharmacological dependence.

A negative result indicates either that the subject has not developed pharmacological dependence, or that he has been abstinent for as little as one week; for it has been shown that immediately after subsidence of an opiate abstinence syndrome, N-allylnormorphine exerts effects identical with those produced in nonaddicted, nonmedicated persons. In these, five to 15 milligrams produces effects quite similar to those produced by smaller doses of morphine, including depression of respiration.

The mechanisms of N-allylnormorphine's action have not been fully explained. But evidence obtained in clinical studies and in investigations

on animals and animal preparations justifies a tentative explanation....

Single doses of opiate-like drugs produce a mixture of "depressant" and "excitant" actions at all levels of the central nervous system. The depressant effects of single doses are often followed by secondary "rebound" changes, with enhancement of functional activity.

When multiple, fixed doses are administered daily over a period of time, the initial depressant effects become progressively less noticeable, while the "rebound" enhancement of functional activity becomes intensified. In part, this reaction may be attributed to the development of hypothetical cellular "counter-adaptations" in the central nervous system. These counter-adaptations can be held in check only by additional opiates with progressively increasing dosages, in order to prevent the abstinence syndrome.

It is further hypothesized that the N-allylnormorphine molecule "competes" with the molecule of opiates for the cellular receptors of the central nervous system--that the N-allylnormorphine molecule enters the cell more rapidly, has a greater affinity for the receptor sites, and that it does not "mask" the counter-adaptations. As a consequence, N-allylnormorphine can not only antagonize the depressant actions of opiate-like drugs, but it can also "unmask" the counter-adaptations responsible for the abstinence syndrome.

Presently, "counter-adaptation," "molecular competition," and "affinity" are not phenomena that can be measured independently of those that they purport to explain. They appear to be useful postulates, however, since they have served to facilitate the prediction of many observable effects of single and repeated doses of various drugs.

(Based on a report, "Rationale of the Diagnosis and Treatment of Addictions," by Abraham Wikler, M.D., Chief, Neuropsychiatric Section, NIMH Addiction Research Center, USPHS Hospital, Lexington, Kentucky.)

USDA Catalog Change

Course No. 5 -- 719 Enzyme Chemistry should be added to list of courses offered by the Graduate School. It will be held Wednesdays from 7 to 8:50 p.m. Instructor, Dr. Alan H. Mehler.

Publication Preview

The following manuscripts were received by SRB Editorial Section between August 16 and August 22.

Baernstein, H. D., et al. The rate of reproduction of *Entamoeba histolytica* in microcultures from inocula of single trophozoites in cell-free medium prepared from embryos of the chick.

Baker, S. P. Clearing factor response in man utilizing a standardized *in vitro* method. An age-wise study with observations on subjects with recent myocardial infarction and hepatic disease.

Bell, R. Q., et al. Retrospective attitude studies of parent-child relations.

Bieri, J. G., et al. Essential fatty acids in the chick. II. Polyunsaturated fatty acid composition of blood, heart, and liver.

Birren, J. E. Psychological limitations of aging.

Busfield, B. L., Jr. The National Institute of Neurological Diseases and Blindness.

Butler, E. G., et al. The localized character of ultraviolet effects on the urodele forelimb.

Cahnmann, H. J. Partially deactivated silica gel columns in chromatography; chromatographic behavior of benzo (a) pyrene.

Dalmat, H. T. Biology and control of simuliid (diptera) vectors of onchocerciasis in Central America.

Felix, R. H. The mental health center. Frederickson, D. S., et al. Failure of alpha-phenylbutyrate and beta-phenylvalerate in treatment of hypercholesterolemia.

Goff, L. G., et al. Elevated end-tidal CO₂ in the trained underwater swimmer.

Gorlin, R., et al. The clinical diagnosis of aortic valvular disease.

Habel, K. Rabies prophylaxis in man. Haverback, B. J., et al. Effect of serotonin (5-hydroxytryptamine) and related compounds on gastric secretion and intestinal motility in the dog.

Haverback, B. J., et al. Serotonin changes in platelets and brain induced by small daily doses of reserpine.

Hiatt, H. H., et al. Some effects of intravenously administered calcium on inorganic phosphate metabolism.

Hiatt, H. H., et al. The effects of parathyroid extract on renal function in man.

Kalckar, H. M., et al. Some considerations concerning the nature of the enzymic galactosylase conversion.

Kalckar, H. M. Report on Dr. Kiyoshi Kurahashi's work on galactose mutants in bacteria.

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Korn, E. D., et al. On the nature of lipoprotein lipase.

Kornetsky, G., et al. A comparison of the psychological effects of certain centrally acting drugs in man.

Labaw, L. W., et al. The electron microscopy of minute crystalline detail.

Labaw, L. W., et al. The structure of southern bean mosaic virus protein crystals.

Leonard, E. Alteration of the contractile response of artery strips by a potassium-free solution, cardiac glycosides, and changes in stimulation frequency.

Lewis, M. S., et al. The binding of ions to the muscle proteins. Measurements on the binding of potassium and sodium ions to myosin A, myosin B, and actin.

Martin, C. M., et al. Studies on gamma globulin --I. Distribution and metabolism of antibodies and gamma globulin in hypogammaglobulinemic patients.

May, E. L. Structures related to morphine. VII. Piperidine derivatives and examples of failure in the Knoevenagel reaction.

McClure, C. D. Follow-up study of 884 neoplasm suspects from the Pittsburgh and Allegheny County mass chest X-ray survey of 1953.

Middleton, A. B. A method of staffing for a psychiatric nursing service.

Mihalyi, E., et al. Nucleic acid and nucleotide content of myosin preparations.

Mosley, V. M., et al. The X-ray microscopy of thin tissue sections.

Nanninga, L. B. The binding of magnesium, calcium, and chloride ions to heavy and light meromyosin.

Olivier, L. J. Survival of pulmonate bilharzia vectors out of water.

Parrott, R. H., et al. Non-bacterial infections affecting the nasopharynx-herpangina, pharyngo-conjunctival fever, and infectious mononucleosis.

Redl, F. What do we do when they fight?

Saroff, H. A. The binding of ions to the muscle proteins. A theory for K^+ and Na^+ binding based on a hydrogen bonded and chelated model.

Scott, Eugene J. Van, et al. Keratinization of the duct of the sebaceous gland and the growth cycle of the hair follicle in the histogenesis of acne in human skin.

Scow, R. O. "Total" pancreatectomy in the rat: operation, effects and postoperative care.

Sokoloff, L. Biopsy as a diagnostic procedure in rheumatic diseases.

Segal, S., et al. The effect of insulin on the blood levels of infused pentoses in man.

Stadtman, T. C., et al. *Clostridium sticklandii* nov. sp.

Stewart, H. L., et al. The pathology of experimental cancer of the liver in rats: a critical review.

Technical group of the Committee on Lipoproteins and Atherosclerosis. An evaluation of serum lipoprotein and cholesterol measurements as predictors of clinical complications of atherosclerosis: a report of a cooperative study of lipoproteins and atherosclerosis.

NIH Spotlight



Ann L. Rogers

Faraway places and strange sounding names are familiar sights and sounds to Ann L. Rogers, Bacteriologist, NIAID, for she has spent the greater portion of her young life moving from place to place.

Ann is a tall, willowy young miss, who was born in Fort Totten, New York, at an Army hospital. Her travels began at an early age for Ann is the daughter of an Army colonel. When asked where she attended school, she said, "Oh, lots of places, but I finally graduated from high school in Rio de Janeiro," the capital of Brazil.

The next four years of Ann's life were spent at Wellesley College, Wellesley, Massachusetts, where she majored in Botany. She chose that curriculum because, at that time, she thought she would like to do landscaping.

Upon graduation Ann joined her parents in Yokohama, Japan, where she lived for eight months. She found this not nearly long enough, as she was fascinated by the Orient and its people.

When the time came for Ann to return to the States, she took the long way around, traveling for a total of 40 days from Yokohama to Genoa, Italy, on the British cargo ship "Surat."

Her first stop on the continent was at Rome where she visited her sister who was living there. Ann then went on to see France, Germany, Austria, Belgium, the Netherlands, Greece, Turkey, and finally England.

Ann reached the British Isles just in time for the coronation of Queen Elizabeth II, but it took a little doing

Obituaries

Arthur G. Waddell, Guard, Plant Safety Branch, died suddenly August 27 at Walter Reed Army Medical Center. He was born in Bloomington, Illinois, and had served in the U. S. Army for eleven years before joining NIH.

Leslie J. Hall, Medical Biology Technician, LB-NCI, died at his home, 5037 East Capitol Street, August 15, following a prolonged illness. He was employed at NIH in 1942.

HUNDLEY Cont'd

In 1940 Dr. Hundley joined PHS and was assigned to NIH in 1943. He has served as a member of the National Advisory Committee on Emergency Feeding; as a consultant on nutrition to the Federal Civil Defense Administration; a councilor for the American Institute of Nutrition; and on several committees and boards of the National Research Council. In 1954 the Arthur S. Flemming Awards Commission selected Dr. Hundley for one of the ten awards given annually for outstanding Government service.

to get in on the ceremonies. She picked a likely spot which she knew was on the Queen's procession route and sat on a curbstone from 11 o'clock one night until the next afternoon. "It was a long wait," Ann said, "but well worth it. The colorful costumes and the golden carriages seemed just like figures out of a fairy tale."

After five months of traveling in Europe and the Far East, Ann returned to the U. S. via Army transport. Her first job was with the National Research Council, and then, in 1954, she joined NIH in her present capacity.

Ann's work in NIAID's laboratory includes TB studies, and at present she is working on the metabolism of the tubercle bacillus along with Dr. George Lones.

Life in Washington, D. C., is a lot of fun for Ann and her four roommates who live in a large house near Dupont Circle. They spend their time gardening, theater-going, and sometimes playing bridge. In the winter months Ann spends much of her time ice skating at a nearby indoor rink and is seriously studying figure skating. Her favorite summertime sport is sailing in a Star sailboat on the Potomac, the Chesapeake, or at Annapolis.

RADIOLOGICAL LABORATORY ESTABLISHED AT NIH

As part of the Nationwide Radiological Surveillance Program conducted by the Public Health Service under an agreement with the Atomic Energy Commission, a central radiological testing group has been established. The laboratory for the organization is at NIH.

The purpose of the program is to obtain data immediately after fallout has taken place, so that local public health groups have a source of factual information quickly and directly. This information would also alert the public health agencies to any danger that might exist from high concentrations of radioactivity. The laboratory provides a check on the field testing techniques.

Prior to establishing the network last spring, the PHS regional engineers met at the Washington office to help set up the program. Each regional engineer then returned to his region and contacted State health departments to obtain their cooperation in gathering the desired information.

Equipment was purchased and distributed to the various stations that had agreed to cooperate. Some of the stations are operated by the individual States and others by PHS.

The network includes 33 stations located throughout the U. S., Alaska, and Hawaii. A typical data collection station is also located at NIH.

Each station samples approximately 1,000 - 2,000 cubic yards of air daily. Using a vacuum-cleaner-type motor in a special housing, airborne dust is collected on a filter. The radioactivity of the dust is estimated with a portable Geiger counter and unless a significant amount of material is found, the filters are forwarded by mail to the central laboratory at NIH.

James G. Terrill, Jr., PHS, Chief of the Radiological Health Program, is responsible for carrying out the nationwide program. At NIH, Dr. Richard Moore, Senior Assistant Sanitary Engineer, a biophysicist, carefully analyzes the samples as they come in. He uses a proportional chamber to measure the intensity of beta radiation. The results of the radioassays are mailed back daily to the station operators, to the PHS regional engineers, and to the Public Health official in the area.



Dr. Richard Moore is about to analyze a filter containing radioactive material. The filter is one sent in by a field station in the Nationwide Radiological Surveillance Program conducted by the Public Health Service for the Atomic Energy Commission.

Once a week the daily information from all stations is collected and forwarded to the Washington, D. C., office of PHS. Here the material is correlated and assembled. The information obtained is then sent out to all stations. The information shows for the various stations the quantitative variation in concentration of beta-radioactive dust.

Each station uses a portable survey meter to estimate external organism activity. Twice daily, some flat exposed area, such as a lawn, is surveyed to see if any recent increase in gamma activity has occurred. In addition, each station exposes one-foot-square sheets of gummed paper to the atmosphere. Whatever falls on this paper over a 24-hour period is retained, and the sheets are mailed daily to AEC's New York Operations Office for radioassay.

The findings of the 33 stations will show the levels of radiation caused by fallout thousands of miles away. For example, when hydrogen bomb tests are made in countries as far away as Russia, the fallout in the United States is increased to some extent. Up to the present the amount of radioactive material in the air has not been alarming. It bears watching, however, and the quantities may increase or health standards may change.

SCHOOL Cont'd

This is the third year for the Graduate School Program at NIH, with registration commencing on September 24 in Room 1N-242, Building 10, and continuing from 11:30 a.m. to 4:30 p.m. each day through September 28. The School is sponsored by the Department of Agriculture and NIH, and is open to all Federal employees and the general public.

Classes are held on the NIH reservation after work hours, and tuition is \$12 per credit hour, payable in two installments. Courses are offered on four levels--non-credit, undergraduate, advanced undergraduate, and graduate. The School does not grant degrees, but a student may, in most cases, transfer his credits to a degree-conferring institution by special arrangement.

Courses are selected by NIH Advisory Committees, and instructors have been chosen by them from the NIH staff and outside. The Graduate School Program is administered by the NIH Office of Clinical and Professional Education. For further information, contact Ext. 2427 or Room 1N-246, Building 10.